GRAMPAW PETTIBONE

How To Spin a PV

While practicing low-level bombing runs on a friendly submarine, a PV–1 was seen to pass over the sub at low altitude and immediately commence a climbing turn to port. The turn steepened, until at 500 feet the aircraft was in an almost vertical bank, at which time it flipped over on its back and dove into the water. Partial control was regained at approximately 200 feet, but the airplane crashed at high speed in a dive estimated at 40°.

Grampaw Pettibone says:

It's hard to believe this pilot had 1,150 hours flight time, with 165 recent hours in the PV–1. Familiarity evidently bred contempt in this case, and this is one airplane that demands respect.

The technique used here was perfect for entry into an accidental spin. No doubt, the pilot never got below *normal* stalling speed in this maneuver, but he neglected to take into account that this was not normal flight. His airplane was in a steep, climbing turn, during which two forces were acting to increase the stalling speed: *1.* acceleration, and *2.* angle of bank.

Acceleration ("g") is developed in turns, as well as in dive pull-outs, and the stalling speed of an airplane increases directly as the square root of acceleration; as explained in Technical Order No. 3–42, and again recently under "Progressive Stalls and Spins" in BuAer NEWS, June 1.

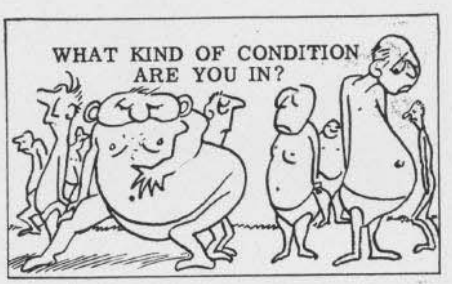
Also, angle of bank affects stalling speed, increasing it directly as the square root of the tangent of the angle of bank. In pilot lingo this simply means that the wings have less lift when banked than when in level flight and that the airplane will stall at higher speeds as the angle of bank is increased (in this case the angle of bank was almost 90°). There is no way of beating these basic flight laws, so it behooves all pilots to recognize them and fly accordingly.

The PV airplane has an exceptionally high wing loading and stalling speed and, therefore, requires more attention to these matters than the average Navy airplane. This is our first real "hot" two-engine airplane, so treat it with respect and keep plenty of airspeed.

Can You Swim?

An engine failure in a TBM–1 caused a forced landing to be made in a river, approximately 50 yards from shore. The plane landed with wheels down, turned over on impact and sank. About 8 seconds later it came to the surface, and the plane captain stepped out of the rear compartment hatch perfectly dry and apparently unhurt. A rowboat put out from shore to rescue the flight crew, but before it got there the airplane sank again. The plane captain also sank—*he could not swim!*

Another recent accident involving a nonswimmer occurred as follows: A Marine pilot in an SNC–1 was faced with a forced landing while flying over a river. Knowing that his passenger couldn't swim, the pilot (big-heartedly) elected to land in a wooded area instead of in the river. At about 50 feet altitude a pine tree sheared off the left wing just outboard of the wing tank. The plane continued through the air for 150 yards, struck the ground on its nose and right wing, rebounded, and, traveling sidewise, struck another tree just abaft the rear cockpit! Result—one wrecked airplane, minor cuts and bruises for the passenger, plus an urgent desire to learn to swim.



Flap Danger

"I was making a touch-and-go landing in a TBF–1. After making contact, my aircraft bounced into the air and I hit the throttle to take off again.

I thought I had enough air speed, so I pulled up my wheels and flaps, but the plane settled and crashed on the mat."—*Pilot.*

▶ **BUREAU COMMENT—This pilot's statement indicates that he was completely unaware of the danger of raising his flaps when near the stalling speed. Technical Note 42–36, which is supposed to be required reading for all pilots, deals generally with the effect of flaps on take-off and landing. It states that, "after take-off, the flaps must not be raised until excess speed has been attained." In this case there were even more specific instructions. The TBF–1 Pilot's Handbook contains the recommendation of the Trial Board to the effect that flaps should not be raised on this airplane after take-off until a speed of 100 knots has been attained.**

Take-Off Emergencies

Case 1.—A pilot with 423 hours flight time was taking off in an N2S–3 when his engine cut out at 200 feet. He attempted to turn back into the field which he had just left, but lost flying speed and spun in.

Case 2.—An SB2A–4 pilot with approximately 1,500 hours flight time experienced engine failure over the edge of the field immediately after take-off. He attempted to get back into the field and, in so doing, lost control of his airplane, which entered a nose-down spiral and crashed.

Case 3.—The engine of an F4U–1 backfired a few times during take-off and then caught again. The pilot, with 470 hours flight experience, went into a left climbing turn until reaching 250 feet, when the engine failed com-

pletely. The pilot then attempted to turn back into the field, but spun in out of the turn.

Grampaw Pettibone says:

All right class, what pilot error do these three recently reported accidents have in common? * * * Right! Then why in blazes do so many of you try to make it back to the field when this happens? You've all had plenty of instruction in this emergency and know that unless you are in the *proper position* and have *plenty of altitude,* you should land straight ahead.

The three pilots mentioned above were all experienced; a good average group. They had all had plenty of training in this emergency, but they hadn't actually linked it up with the real thing. To them, it was just part of the training program. When their engines did fail, they followed their natural instinct, which was to land on an airfield. And the chances are you'll do the same thing, if you haven't prepared yourself ahead of time.

This type of emergency usually occurs at low altitude; too low to jump and with no time available to figure things out—only a few split seconds to jockey around. The main thing to remember is, *don't lose flying speed!* And this isn't as easy as it sounds because you are usually in a climb, just above stalling speed.

So snap that nose down, just like you were taught in a cut-gun emergency. After that, if you have any time left, you can maneuver into the clearest available landing area. If you can get your wheels on the ground with the airplane still under control, your chances of "walking away from it" are a thousand times better than if you lose control and spin in. Don't try to turn back into the field when you haven't got a snowball's chance of making it.

This is one of the maneuvers you can't learn by correcting your mistakes because you seldom get a second chance. So use your head for something besides keeping your earphones apart; figure this thing out and get it firmly fixed in your mind. Then, to insure that you will react correctly, visualize this emergency on your take-offs until you know force of habit will overcome your natural instinct.

Attention Maintenance Personnel

The pilot of a TBM–1 started a normal take-off. As he went down the runway his r. p. m. dropped and his engine lost power. A bright orange flame was observed coming from his exhaust at this time. The pilot cut his throttle, but ran off the mat and into a ditch, which pushed the landing gear up through the center section, bent the propeller, and damaged a wing.

Investigation disclosed that this accident occurred as the result of an error by maintenance personnel. During the previous night the airplane had been given a 60-hour check. As a part of this check the carburetor stabilizer unit was removed for a flow test. When this unit was replaced, the *wrong gasket* was used (a solid gasket, instead of one having the proper cut-outs for vent holes). This caused the carburetor to run rich, which, in turn, caused the engine to load up and lose power.

Prop Failure Plus Pilot Error

The automatic propeller control of an F4F–4 became inoperative at 11,000 feet, and propeller went into positive high pitch. The pilot stated that he was unable to hold his altitude with 1,600 r. p. m.'s and 35 inches manifold pressure and was forced to land on the beach.

The Trouble Board said: This airplane will more than maintain altitude and speed with 1,600 r. p. m.'s and 35 inches manifold pressure—with wheels up. It is believed the pilot should have been able to fly his airplane back to the base under these conditions.

▶ BUREAU COMMENT—Also, there was no indication that any attempt was made to bring the propeller out of full high pitch by use of the manual increase r. p. m. circuit.

Know Your Cockpit!

Following an engine failure at 100 feet immediately after take-off, the pilot of an SBD–4 apparently centered his attention inside the cockpit in an effort to get the engine started. While concentrating on this he failed to note the flight path of his airplane. The airplane slowly nosed over and crashed to destruction.

The Trouble Board was of the opinion that had the pilot concentrated on making a full-stall landing, he would have probably escaped injury.

Grampaw Pettibone says:

Remember that! If your engine cuts out at low altitude, don't duck your head in the cockpit. Concentrate on making a good landing. Of course, if you have an idea what is causing the trouble, try to correct it, but don't ever divert your attention from flying your airplane at low altitude.

Here, again, the answer is "Know your cockpit!" A glance at the instrument panel may tell you what is wrong. When you locate it, however, your fingers should be so familiar with the cockpit that you can make the correction without looking.

Often Ease Forward on Stick

There have been a number of accidents similar to this; several of them at night. They illustrate one of two common dangers which occur when attention is diverted from controlling an airplane. When leaning forward to look at the instrument panel, or when the head is ducked inside the cockpit, the tendency is to ease forward on the stick at the same time. That is why this is particularly dangerous at low altitude. The other danger occurs when flight leaders, or anyone but the last man in a formation, forgets to fly his airplane when he leans back to look around at the rest of the flight. The tendency here is to ease back on the stick unintentionally and pull up into the formation.

Although it is hard to make the test when you are conscious of it, try yourself out on these two points sometime when you are alone. Maybe your reaction is different; maybe you relax all pressure on the stick, in which case the airplane will react to the tab settings. A little experimenting will at least show you how easy it is to get out of level flight and should impress you with the vital necessity for consciously controlling your airplane. If you don't take charge, it will!

Full Power Test

An SBD–4 airplane crashed when the engine cut out on take-off, apparently due to fouled spark plugs. The Trouble Board in this case made the following pertinent remark: "It is just as important to hold your brakes and test for full power on a large field as on a small one."